1 Introduction

This document provides two sets of options in the CodeWarrior tools to produce optimal performance of the ColdFire devices. One set optimizes speed; another set optimizes code size.

2 Optimizing Speed

To optimize ColdFire devices for speed you can configure compiler settings from:

- MCU 10.x Eclipse IDE
- Command Line

NOTE The following procedure assumes that you have already created a project for a ColdFire device.
2.1 Optimizing Speed from MCU 10.x Eclipse IDE

To optimize ColdFire devices for speed:

1. Select a ColdFire project in the CodeWarrior Projects view.
2. Select Project > Properties.

Figure 1. Project Menu

The Properties for <project_name> window appears.

Figure 2. Properties for <project_name> Window
3. Select **C/C++ Build > Settings > ColdFire Compiler > Optimization**.

4. From the **Optimization Level (-opt)** drop-down list select 4.

5. From the **Speed vs. Size** drop-down list select **Speed**.

**Figure 3. ColdFire Compiler > Optimization Panel**

6. Select **C/C++ Build > Settings > ColdFire Compiler > Processor**.

7. Check the following checkboxes.
   - **Register Coloring (-coloring)**
   - **Scheduling (-scheduling)**
   - **Peephole (-peephole)**
NOTE If the current project can be accommodated with a smaller library following is the best configuration but can be modified as per the requirement. However, the following steps are optional.

8. Select C/C++ Build > Settings > Librarian.
9. Check the Enable library automatic configurations checkbox.
10. From the Model drop-down list select ewl.
11. From the Print formats drop-down list select int.
12. From the Scan formats drop-down list select int.
13. From the IO mode drop-down list select raw.
14. Click **Apply**.
15. Click **OK**.

**NOTE** Alternatively, select **Project > Properties > C/C++ Build > Settings > ColdFire Compiler > Language Settings** and select **File** from the **IPA** drop-down list.

### 2.2 Optimizing Speed from Command Line

From the command line, the compiler should get these options

```bash
-optimization level=4 -optimization speed -coloring -scheduling -peephole
```

(Optional)

```bash
-lavender model=ewl ,print=int ,scan=int ,io=raw
```

### 3 Optimizing Code Size

To optimize ColdFire devices for code size you can configure compiler settings from:

- MCU 10.x Eclipse IDE
- Command Line
3.1 Optimizing Size from MCU 10.x Eclipse IDE

To optimize ColdFire devices for code size:

1. Select a ColdFire project in the CodeWarrior Projects view.
2. Select Project > Properties.

The Properties for <project_name> window appears.
Figure 7. Properties for <project_name> Window

3. Select **C/C++ Build > Settings > ColdFire Compiler > Optimization**.

4. From the **Optimization Level (-opt)** drop-down list select **4**.

5. From the **Speed vs. Size** drop-down list select **Size (default)**.

6. Select **C/C++ Build > Settings > ColdFire Compiler > Processor**.

7. Check the following checkboxes.
   - **Register Coloring (-coloring)**
   - **Scheduling (-scheduling)**
   - **Peephole (-peephole)**
Figure 8. ColdFire Compiler > Optimization Panel

(Optional (1)), if the current project can fit its code / data in 16-bit following is the best configuration but can be modified as per the requirement.

8. From the Code Model drop-down list select Near Relative (pc16).
9. From the Data Model drop-down list select Near (16 bit).
(Optional (2)), depending on the complexity of the compiled code, one can use A6 Stack Frames, but with the cost of reserving A6 register. If the code is too complex and requires more data registers, reserving A6 might come with register allocation penalties, resulting in worse size as before. Using this option is not predictable and should be used only if better size is achieved.

10. Check the **A6 Stack Frames (-a6)** checkbox.

(Optional (3)), depending on the complexity of the compiled code, one can use Small Data Areas .sdata/.sbss, but with the cost of reserving A5 register. If the code is too complex and requires more data registers, using SDA might come with register allocation penalties, resulting in worse size as before.

11. Set the **Use .sdata/.sbss for (byte in integer between -1..32K)** option as per the requirement.

(Optional (4)), if the current project can be accommodated with a smaller library following is the best configuration but can be modified as per the requirement.

12. Select **C/C++ Build > Settings > ColdFire Compiler > Librarian.**
13. Check the **Enable library automatic configurations** checkbox.
14. From the **Model** drop-down list select **ewl**.
15. From the **Print formats** drop-down list select **int**.
16. From the **Scan formats** drop-down list select **int**.
17. From the **IO Mode** drop-down list select **raw**.
18. Click **Apply**.
19. Click **OK**.

**NOTE** Alternatively, select **Project > Properties > C/C++ Build > Settings > ColdFire Compiler > Language Settings** and select **File** from the **IPA** drop-down list.

### 3.2 Optimizing Speed from Command Line

From the command line, the compiler should get these options

```
-opt level=4 -opt size -coloring -scheduling -peephole
```

(optional (1))

```
-model nearRelCode -model nearData
```
(optional (2))
- a6

(optional (3))
- sdata all

(optional (4))
- lavender model=ewl, print=int, scan=int, io=raw
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